REMARKS

The Examiner's Office Action, dated February 12, 2002, has been received and its contents reviewed. In view of the above amendments and the following remarks, reconsideration of this application is now requested.

Claims 1-12 were pending prior to the instant amendment. By this amendment, claims 4-8 have been amended; while claims 1, 2, 3, 9 and 12 have been canceled. New claim 13 has also been added. Consequently, Claims 4-8, 10, 11 and 13 are currently pending in the instant application. Support for the amendments adding claim 13 can be found in the specification, for example at page 10, lines 22-25, page 11, lines 1-8, and original claims 1, 2 and 3.

Turning now to the Office Action, claims 1-12 are again rejected under 35 U.S.C. § 102(b) as anticipated by Porowski et al. (U.S. Patent 5,637,531). This rejection is respectfully traversed at least for the reasons provided below.

With respect to the newly added claim 13 (which combines the features of claims 1, 2 and 3 previously searched/examined by the Examiner) and the newly amended claim 8 (which combines the features of previously searched/examined claims 8, 9 and 12), a novel feature of the present invention resides in a method of improving the growth rate and crystal quality of a nitride semiconductor device formed during a vapor deposition process when the nitride semiconductor layer includes aluminum or magnesium. During vapor deposition of multi-layered nitride films of different compositions onto a substrate, a lot of intermediate reaction products are present in the material gases. However, by the process set forth in claims 8 and 13 the growth rate and crystal quality of a cladding layer composed of AlGaN, which is trapped within the production light and carrier of the semiconductor light emitting device, and also the crystal quality of a cladding layer of p-type AlGaN, which is used as a p-type dopant of magnesium, can be improved.

As shown in Figures 5(a), 5(b) and 5(c), the processes of claims 8 and 13 provides an increased growth rate when at least the first nitride semiconductor layer, containing aluminum and/or magnesium, is deposited at an ambient pressure that is lower than the ambient pressure utilized during the second growth step and is also less than one atmosphere. In contrast, Porowski et al teaches only a process of growing first and second nitride semiconductor layers in a melt of the semiconductor material under a nitride atmosphere in which the ambient pressure

during first deposition step is greater than 1 atmosphere, e.g., 200 bar to 10 kbar, and then conducting deposition of the second layer under a nitride atmosphere that can be less than 1 atmosphere, i.e., 1 bar.

Consequently, since each and every feature of the present claims is not taught (and is not inherent) in the teachings of Porowski et al, as is required by MPEP Chapter 2131 in order to establish anticipation, the rejection of claims 1-12, under 35 U.S.C. § 102(b), as anticipated by Porowski et al. is improper and must be withdrawn.

CONCLUSION

Having responded to all rejections set forth in the outstanding final Office Action, it is submitted that claims 4-8, 10, 11 and 13 are now in condition for allowance. An early and favorable Notice of Allowance is respectfully solicited. In the event that the Examiner is of the opinion that a brief telephone or personal interview will facilitate allowance of one or more of the above claims, the Examiner is courteously requested to contact Applicants' undersigned representative.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

4. (Amended) The method of fabricating a nitride semiconductor device of claim [1] 13,

wherein [one of said first growth ambient pressure and] said second growth ambient pressure is a pressure higher than the atmospheric pressure [and the other is a pressure lower than the atmospheric pressure].

5. (Amended) The method of fabricating a nitride semiconductor device of claim 4,

wherein [, among said plural nitride semiconductor layers, a] said second nitride semiconductor layer [grown under said pressure higher than the atmospheric pressure] includes indium.

6. (Amended) The method of fabricating a nitride semiconductor device of claim 5,

wherein said second nitride semiconductor layer [including indium] is an active layer.

7. (Amended) The method of fabricating a nitride semiconductor device of claim [1] 13,

wherein the step of growing said [one] first nitride semiconductor layer and the step of growing said [adjacent] second nitride semiconductor layer are conducted at different growth temperatures.

8. (Twice amended) A method of fabricating a nitride semiconductor device by a vapor deposition method comprising the steps of:

forming plural seed crystals on a substrate;

selectively growing, on said substrate, a first nitride semiconductor layer including aluminum from said plural seed crystals under a first growth ambient pressure; and

growing, on said first nitride semiconductor layer, a second nitride semiconductor layer under a second growth ambient pressure different from said first growth ambient pressure,

wherein said first growth ambient pressure is lower than said second growth ambient pressure, and is lower than the atmospheric pressure.re different from said first growth ambient pressure.